

AMENDMENTS TO THE CLAIMS

Claim 1 (canceled)

**Claim 2 (currently amended):** The fluorescence quencher composition compound of claim + 76 wherein the electron-withdrawing groups are selected from NO<sub>2</sub>, CN, CF<sub>3</sub>, CO<sub>2</sub>H, CO<sub>2</sub>R, C(O)NH<sub>2</sub>, C(O)NHR, C(O)NR<sub>2</sub>, CHO, C(O)R, SO<sub>2</sub>R, SO<sub>2</sub>CF<sub>3</sub>, SO<sub>2</sub>OR, SO<sub>3</sub>H, NO, and C<sub>5</sub>—C<sub>14</sub> aryl NO<sub>2</sub>, CN, CF<sub>3</sub>, CO<sub>2</sub>H, CO<sub>2</sub>R<sup>6</sup>, C(O)NH<sub>2</sub>, C(O)NHR<sup>6</sup>, C(O)NR<sup>6</sup>R<sup>6</sup>, CHO, C(O)R<sup>6</sup>, SO<sub>2</sub>R<sup>6</sup>, SO<sub>2</sub>CF<sub>3</sub>, SO<sub>2</sub>OR<sup>6</sup>, SO<sub>3</sub>H, NO and C<sub>5</sub>—C<sub>14</sub> aryl, wherein R R<sup>6</sup> is H, C<sub>1</sub>—C<sub>12</sub> alkyl or C<sub>5</sub>—C<sub>14</sub> aryl.

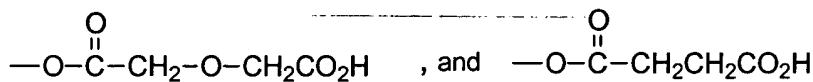
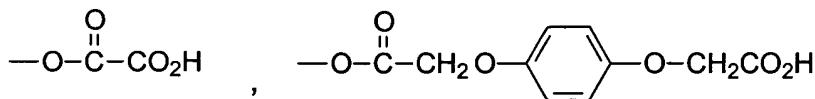
**Claim 3 (currently amended):** The fluorescence quencher composition compound of claim 2 wherein a NO<sub>2</sub> is *para* to a diazo group.

**Claim 4 (currently amended):** The fluorescence quencher composition compound of claim + 76 wherein the electron-donating groups are selected from O<sup>-</sup>, S<sup>-</sup>, NR<sub>2</sub>, NHR, NH<sub>2</sub>, NHC(O)R, OR, OH, OC(O)R, SR, SH, Br, I, Cl, F, R, and C<sub>5</sub>—C<sub>14</sub> aryl O<sup>-</sup>, S<sup>-</sup>, NR<sup>7</sup>R<sup>7</sup>, NHR<sup>7</sup>, NH<sub>2</sub>, NHC(O)R<sup>7</sup>, OR<sup>7</sup>, OH, OC(O)R<sup>7</sup>, SR<sup>7</sup>, SH, Br, I, Cl, F, R<sup>7</sup> and C<sub>5</sub>—C<sub>14</sub> aryl, wherein R R<sup>7</sup> is H, C<sub>1</sub>—C<sub>12</sub> alkyl or C<sub>5</sub>—C<sub>14</sub> aryl.

**Claim 5 (currently amended):** The fluorescence quencher composition compound of claim 4 wherein a OCH<sub>3</sub> is *ortho* or *meta* to a diazo group.

**Claim 6 (currently amended):** The fluorescence quencher composition compound of claim + 76 wherein Z is OH.

**Claim 7 (currently amended):** The fluorescence quencher composition compound of claim + 76 wherein Z is an ester selected from the structures:



Claim 8 (canceled)

B2

**Claim 9 (currently amended):** The fluorescence quencher composition compound of claim 4 76 wherein X is selected from DMT, MMT, trityl, substituted trityl, pixyl, and trialkylsilyl.

Claims 10 - 18 (canceled)

B3

**Claim 19 (currently amended):** The fluorescence quencher composition compound of claim 48 78 wherein  $\text{R}_1$  and  $\text{R}_2$   $\text{R}^1$  and  $\text{R}^2$  are each isopropyl and  $\text{R}_3$   $\text{R}^3$  is cyanoethyl.

**Claim 20 (currently amended):** The fluorescence quencher composition compound of claim 48 78 wherein X is selected from DMT, MMT, trityl, substituted trityl, pixyl, and trialkylsilyl.

Claims 21-22 (canceled)

B4

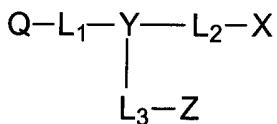
**Claim 23 (currently amended):** The fluorescence quencher composition compound of claim 4 76 where X is a polynucleotide.

**Claim 24 (currently amended):** The fluorescence quencher composition compound of claim 23 wherein the polynucleotide comprises one or more N-[2-(aminoethyl)]glycine units having a nucleobase attached to nitrogen through a methylene carbonyl linkage.

*B4*  
*CO 4.* **Claim 25 (currently amended):** The fluorescence quencher composition compound of claim 23 wherein the polynucleotide comprises one or more 2'-4' or 3'-4' bicyclic sugar modifications.

*✓*  
**Claims 26-75 (canceled)**

**Claim 76 (new):** A fluorescence quencher compound having the structure:



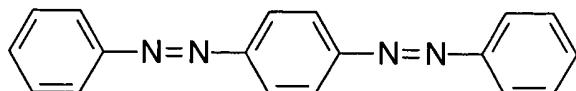
*B5*  
wherein:

Y is selected from N and CR, wherein R is H, C<sub>1</sub>-C<sub>6</sub> alkyl or C<sub>5</sub>-C<sub>14</sub> aryl;  
L<sub>1</sub>, L<sub>2</sub>, and L<sub>3</sub> are independently selected from a bond, C<sub>1</sub>-C<sub>12</sub> alkyldiyl, C<sub>1</sub>-C<sub>12</sub> alkoxyldiyl, C<sub>1</sub>-C<sub>12</sub> alkylaminodiyl, C<sub>1</sub>-C<sub>12</sub> alkylamidediyl, C<sub>5</sub>-C<sub>14</sub> aryldiyl, and 1-20 ethyleneoxy units, or, alternatively, L<sub>1</sub> is -NR<sup>4</sup>C(=O)(CH<sub>2</sub>)<sub>n</sub>-, -NR<sup>4</sup>C(=O)(CH<sub>2</sub>)<sub>n</sub>C(=O)NH-, or -NR<sup>4</sup>(CH<sub>2</sub>)<sub>n</sub>C(=O)NH(CH<sub>2</sub>)<sub>n</sub>-, L<sub>2</sub> is -(CH<sub>2</sub>)<sub>n</sub>O-, and L<sub>3</sub> is -(CH<sub>2</sub>)<sub>n</sub>-, wherein n is an integer from 1 to 12 and R<sup>4</sup> is H, C<sub>1</sub>-C<sub>6</sub> alkyl or C<sub>5</sub>-C<sub>14</sub> aryl;

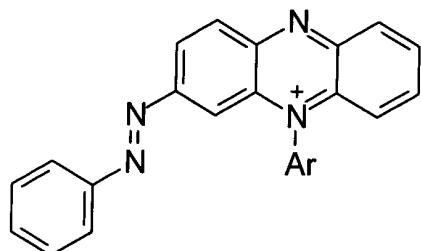
X is an amino acid, a polypeptide, a nucleoside, a nucleotide, a polynucleotide, or a protected form thereof, or X is an acid-labile protecting group;

Z is selected from H, CO<sub>2</sub>H, OH, NH<sub>2</sub>, NHR<sup>5</sup>, NR<sup>5</sup>R<sup>5</sup>, SH, OP(NR<sup>1</sup>R<sup>2</sup>)(OR<sup>3</sup>), an ester, a cleavable linker, a reactive linking group, and a label selected from a fluorescent dye, a hybridization-stabilizing moiety, a chemiluminescent dye, and an affinity ligand, wherein: R<sup>1</sup> and R<sup>2</sup>, when taken separately, are selected from C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>5</sub>-C<sub>14</sub> aryl and saturated rings containing up to 10 carbon atoms, or, when taken together with the phosphoramidite nitrogen atom form a saturated ring containing from 5 to 12 ring atoms; R<sup>3</sup> is a phosphite ester protecting group; and R<sup>5</sup> is selected from H, C<sub>1</sub>-C<sub>6</sub> alkyl and C<sub>5</sub>-C<sub>14</sub> aryl; and

Q is selected from the diazo structures:



and



wherein:

Ar is C<sub>5</sub>–C<sub>14</sub> aryl;

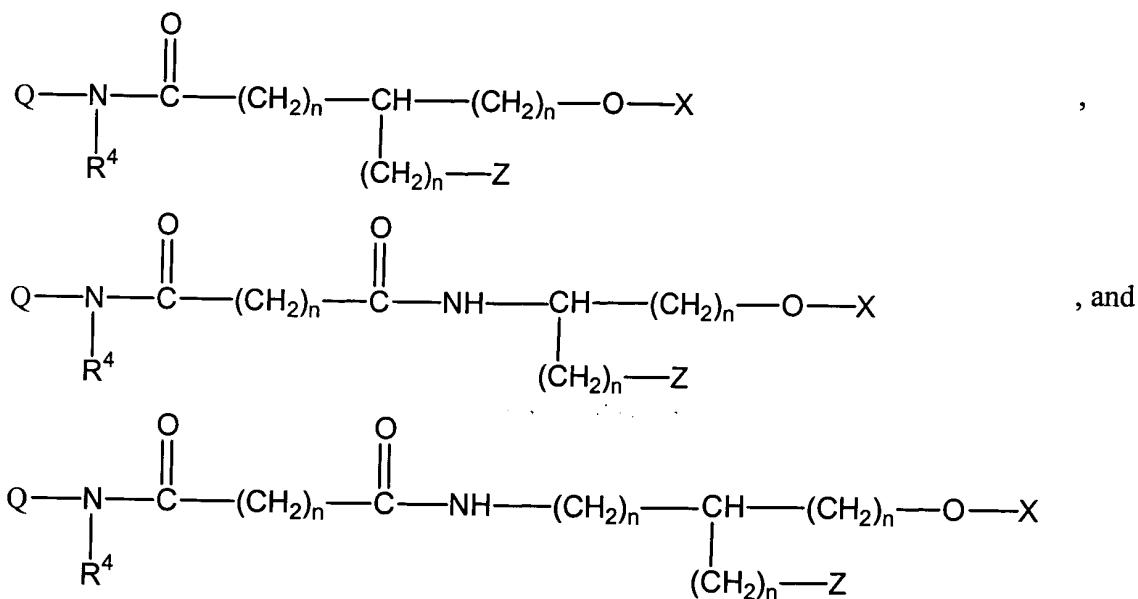
one of the aryl carbons of the diazo structures is the site of attachment to L<sub>1</sub>;

at least one aryl carbon of each diazo structure is substituted with an electron-withdrawing group; and

at least one aryl carbon of each diazo structure is substituted with an electron-donating group.

B5  
CD04

**Claim 77 (new):** The fluorescence quencher compound of claim 76 which is selected from the structures:



wherein n and R<sup>4</sup> are as previously defined.